North Central Tennessee Regional Water Supply Planning Pilot Study

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Presentation Outline

- Regional Need Statement
- Alternatives Under Consideration
- Tier 1 Alternative Screening Protocol
- Tier 1 Screening Summary and Results
- Tier 2 Alternative Screening Protocol
- Tier 2 Screening Summary and Results
- Recommended Regional Alternative
- Open Discussion – Next Steps

Regional Need Statement

- Principle Regional Source - Old Hickory Lake.
- White House and Gallatin Utilities satisfy 90% of existing demand.

- Existing regional demand 22.3 MGD
- 2030 regional demand 32.5 MGD
- Old Hickory Lake can meet this demand, but a charge for withdrawals may be instituted in the future and could impact water rates across the region.

- Portland's existing source - small surface stream and lake
- Its average annual demand of 2 MGD cannot be met reliably.
- Portland purchases finished water from neighboring utilities
- With no formal contracts, security for the system is not provided.

Alternatives Under Consideration

- Regionalization – Water Sharing Among Utilities
- Caney Fork Creek Reservoir
- Raw Water Pipeline from Portland to Cumberland River
- Groundwater

Alternative Screening Protocol

- Tier 1:
  - Reliable Capacity
    - Need met with minimal risk
  - Anticipated Project Cost
    - Feasibility, Design, Construction
  - Implementability
    - Permitting, Public Acceptance, Property Acquisitions, Constructability
  - Flexibility
    - Phased Implementation, Drought Resistance

Tier 1 Screening Summary

- Regionalization
  - White House UD Connection to Portland - Requires Fewer Infrastructure Upgrades than Gallatin/Westmoreland Connection
- Provides Reliable Capacity
  - 20% of Portland's Projected Demand When Flow in WF Drakes Creek Cannot Meet Demand and City Lake is Less than Full
  - Any Peak Demands above Portland's Current Water Treatment Capacity of 3 MGD
- Anticipated Project Cost – Present Value
  - $4.84 M in Capital Improvements to meet 2030 Demand Projections
  - Includes O&M, but not Cost of Water Purchased
- Implementability
  - Requires Cooperation and Coordination Between Utilities
  - No Outstanding Concerns with Infrastructure Construction
- Flexibility
  - Improves Resistance to Drought
  - Allows for Expansion of Service as Needed
  - Can be implemented in phases

Tier 1 Screening Summary

- Caney Fork Creek Project
  - Earthen Embankment/Roller Compacted Concrete Dam
- Reliable Capacity
  - Expected Project Yield – 2.08 MGD
- Anticipated Project Cost – Present Value
  - $13.2 M including Operation and Maintenance for 50 yrs
- Implementability
  - Significant Environmental Impacts
  - Permitting Issues
- Flexibility
  - Single Phase Project
  - Yield Limited
  - Not Highly Drought Resistant

Tier 1 Screening Summary

- Raw Water Pipeline from Portland to Cumberland River
  - 21 Miles of 10” Line
- Reliable Capacity
  - 1 MGD Capacity – Concept
- Anticipated Project Cost
  - $13.2 M in Capital Improvements
  - Includes WTP Expansion to 4 MGD
  - Does not include Operation and Maintenance Estimate
- Implementability
  - Moratorium on New Withdrawals from Old Hickory
- Flexibility
  - Can be Designed for Greater Capacity
  - Highly Drought Resistant

Tier 1 Screening Summary

- Groundwater
  - USACE - Nashville, TN Urban Water Supply Study (1979)
    - Well Field – 9 wells
    - Yield estimated at ~1.3 MGD
- Reliable Capacity
  - Firm Yield Not Established
  - Recent Study Indicates Poor Yield and Water Quality
- Anticipated Project Cost
  - Not Established
- Implementability
  - No Outstanding Concerns with Well Field Construction
  - Reliable Capacity Not Established; but Likely Not Acceptable
- Flexibility
  - Flexibility in Determining Well Field Size and Locations

Tier 1 Evaluation Results

Alternative	Reliable Capacity	Cost	Implementability	Flexibility
Regionalization (WHUD Connection)	+	$$	+	+
Caney Fork Creek Reservoir	+	$$$	-	-
Portland Raw Water Pipeline to Cumberland	+	$$$	+/-	-
Groundwater	-	$	+	+

- Reliable Capacity Criterion Most Important in this Evaluation
- Groundwater Alternative Eliminated from Further Consideration

Alternative Screening Protocol

- Tier 2:
  - Anticipated Project Cost
    - Direct Comparison
  - Water Quality
    - Raw and/or Finished
  - Environmental
    - Benefits and Impacts
  - Other Factors

Tier 2 Evaluation Results

Alternative	Cost [1]	Finished Water Quality	Environmental Benefits or Impacts	Other Factors
Regionalization (WHUD Connection)	$4.8 M	Potential Improvement	Slight impacts from infrastructure construction	Requires Cooperation Between Entities
Caney Fork Creek Reservoir	$13.2 M	No Change	Substantial alteration of aquatic resources	Conflicts with Clean Water Act Compliance
Portland Raw Water Pipeline to Cumberland River	$13.4 M	No Change	Slight impacts from pipeline construction	Treatment plant operations

(1) Includes estimate of potential future charge for withdrawals from Old Hickory, where applicable

- **Anticipated Project Costs**
  - Regionalization is Least Expensive and the Most Economically Feasible
- **Water Quality**
  - Expected Potential Improvement to Finished Water Quality with Regionalization
    - WHUD Uses Combination Conventional and Membrane Filtration – Future WTP Expansions Anticipated to be Membrane Filtration
- **Environmental**
  - Potential Slight Impacts due to Construction of Regionalization or Raw Water Pipeline Alternatives
  - Substantial Alteration of Aquatic Resources are Expected With Caney Fork Creek Reservoir Alternative
- **Other Factors**
  - Portland and WHUD Must Reach Agreement on Terms of Contract for Capital Improvements and Operational Costs to be Shared.
  - Environmental Impacts of Caney Fork are not Acceptable with Potentially Feasible Alternatives Available.
  - Operation and Maintenance Costs for the Raw Water Pipeline have the Potential to be Significant

Next Steps – Open Discussion

- Study Report Schedule
- Statewide OASIS License Initiative
- Other Topics/Questions?